material. It might also be instructive to know how they have theorized about personalities and how those theories might differ from those of practitioners in other settings.

A central proposition of Gregg's book is that discontinuities and outright failures in the region's economic and political development have had negative effects on the psyches of large numbers of its inhabitants, causing them to turn to fundamentalist Islam. But this assertion also goes largely unsupported by directly relevant data — even though the case histories of young Arabs, including those who have turned to religion and violence, are accessible and have been drawn on by other authors interested in the link between personal circumstances and political violence.

The structure of Gregg's argument seems questionable in at least two important regards. First, his contention that the Middle East and North Africa constitute a coherent cultural area can be challenged. He admits that there are subregions, including North Africa, the Gulf and the Nile Valley, but he de-emphasizes the differences between them. The absence of the Levant as a distinct subregion is one shortcoming. The more vital question of whether a Beiruti and a dweller in the Moroccan High Atlas, for example, inhabit the same cultural space is largely unanswered.

A second problem has to do with his use of the dichotomy between the traditional and the modern. He repeatedly warns that this duality is an oversimplification, but much of his argument is nevertheless based on discontinuities resulting from people having to inhabit these two divergent worlds, or moving from one to the other. His argument about the region being a distinct cultural area is based heavily on the legacy of traditional patterns of agriculture and desert nomadism, as if the region had not changed since Lerner wrote his seminal work in the 1950s.

But the region has changed dramatically since that time, raising the question of the extent to which the traditional continues to clash with the modern and thus accounts for personally disruptive discontinuities. Gregg states that young high-school and university students typically have illiterate parents, as if the region were witnessing its first generational wave of secondary and post-secondary education. In reality, many countries in the region are now into their third, fourth or even fifth generation of university-educated youth. The connection between today's youths and their camel-herding forbears, if indeed that's what they were, is pretty tenuous. Cultural psychology should long ago have abandoned this hoary old duality and come up with explanations of contemporary cultures and the personalities of which they are constituted that rely more on the present than on some hypothetical past.

Despite these frailties, Gregg's book has much to recommend it. The publishers are to be commended for producing a book in a discipline widely considered to be passé, but which deserves reconsideration. Gregg provides an encyclopaedic review of the cultural-psychology literature while seeking to reintroduce individual variation as an important variable for understanding the key issues of our times. He raises the important question of the impact of oppression, war and violence on large numbers of residents of the Middle East and North Africa, and provides a useful agenda for future research. ■

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Feathered friends

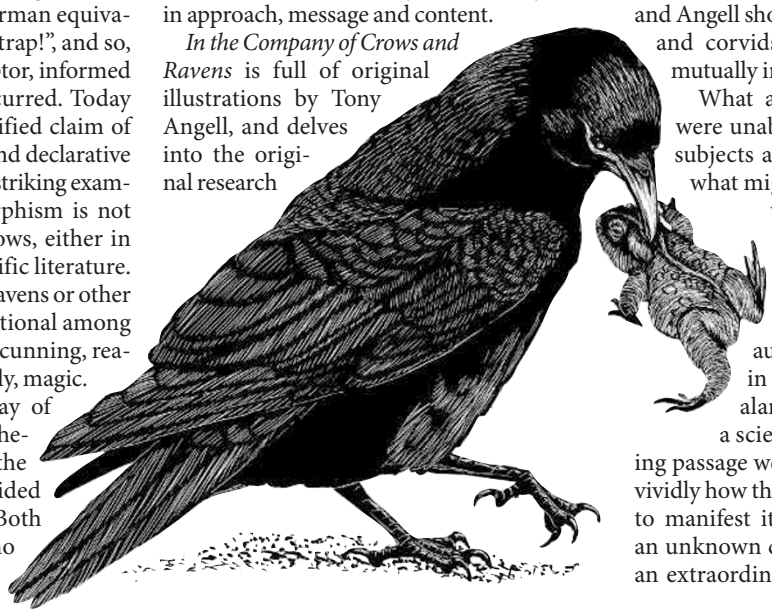
In the Company of Crows and Ravens
by John R. Marzluff & Tony Angell
Yale University Press: 2005. 408 pp.
$30, £18.95

Crows: Encounters with the Wise Guys of the Avian World
by Candace Savage
Greystone Books: 2005. 120 pp.
$20, Can$27

Alex Kacelnik

Konrad Lorenz claimed that a tame crow called Hansl, returning after a long absence with a broken digit, said the German equivalent of "Got him in a blooming trap!", and so, by repeating the words of its captor, informed Lorenz how the injury had occurred. Today we would see this as an unjustified claim of the use of referential language and declarative autobiographical memory. This striking example of projective anthropomorphism is not unusual when dealing with crows, either in popular culture or in the scientific literature. People who live around crows, ravens or other corvids often see them as exceptional among animals, possessing qualities of cunning, reasoning, deception and, frequently, magic.

I can think of no better way of becoming immersed in this phenomenon — and enjoying the experience — than that provided by these two beautiful books. Both have been written by people who know and love these animals, and who use every opportunity to introduce, in lucid but accessible language, up-to-date ideas from behavioural ecology and evolutionary biology. Both are beautifully illustrated and produced, and this adds to the pleasure of sailing easily through them. Indeed, they are as gripping and difficult to put down as any good work of fiction. They mix scientific research with fables, poems and mythical stories ranging from Scandinavia to Mexico and Australia. The ground they cover overlaps to some extent, but there is sufficient extra material in each to make it worthwhile to buy both, as they differ in approach, message and content.



In the Company of Crows and Ravens is full of original illustrations by Tony Angell, and delves into the original research published over many years by John Marzluff. Marzluff and Angell put forward the notion of cultural coevolution, and they suggest that corvids are the clearest example of a culturally coevolved wild organism. They even hypothesize that the very existence of human culture as we know it may have been influenced by corvids. They write, for instance: "Ravens scavenged from large animal kills in the Pleistocene and quickly learned to exploit the foods gathered by early human hunters and fishers. Fending off scavengers may have favored people with a culture of living in groups." By referring to many published studies, ranging from these ancient interactions to the present-day association between crows and the agricultural and urban environment, Marzluff and Angell show how the destinies of humans and corvids have been intertwined and mutually influential.

What a pity, then, that the authors were unable to resist the charm of their subjects and have on occasion fallen to what might be called 'corvidean exceptionalism'. Not only are some anecdotal observations used to generalize concepts beyond what can reasonably be justified, but, in a few cases, the authors seem to have indulged in a suspension of disbelief that is alarming in a book popularizing a scientific matter. In an embarrassing passage we are told: "Tony Angell recalls vividly how the spirit of a good friend seemed to manifest itself in a crow." It seems that an unknown crow appeared and behaved in an extraordinary fashion for two days until

Angell realized the crow's similarity to a friend who lived far away and had been ill. Needless to say, Angell later learned that his friend had died the day the crow arrived. They then ask people to report similar experiences. Do not be discouraged, however, as this is the worst such transgression in the book, and it should not obscure the value of the rest. Perhaps you should skip that page.

Candace Savage's *Crows* is a beautifully crafted celebration of these birds, and places a greater emphasis on the author's and other people's artistic and emotional perception than on the fostering of a specific hypothesis. But she too uses every opportunity to introduce sound evolutionary and ecological concepts, including good descriptions of recent research on crow communication, breeding biology and, to a lesser extent, ecology.

Corvids are without doubt extremely interesting creatures, and research on corvid behaviour is enjoying an unprecedented boom. This is to be celebrated because the mapping of minds that are so different to the better-known minds of mammals may help us think more clearly about the conditions that promote the evolution of advanced cognition. Corvid research may ultimately help in explaining why the primates, which perhaps deserve to be called featherless corvids, have experienced such rapid and differentiated cognitive evolution. Whatever you read, however, remember that crows are just birds, after all. ■

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In the beginning

Genesis: The Scientific Quest for Life's Origins
by Robert M. Hazen
Joseph Henry Press: 2005. 339 pp. $27.95

Leslie Orgel

There aren't many facts or opinions about the origin of life that are universally accepted. Researchers agree that Earth is a little more than 4.5 billion years old. Most would also agree that organisms more or less like bacteria evolved in the first billion or so years of Earth's history, and that darwinian selection, acting on polymeric molecules, was involved. But almost everything else about the origin of life remains obscure. Little is known with certainty about the physical environment in which life evolved or about the detailed steps that that led from unconstrained abiotic chemistry to the organized complexity of biochemistry.

Our limited knowledge of the environment in which life evolved has led to the blossoming of diverse 'scenarios' aimed at describing one or more of the important steps on the road to life. Some are supported by extensive experimental studies, whereas others remain purely hypothetical. This is chaotic intellectual territory, so anyone entering it for the first time needs an accomplished and unbiased guide. Having read Robert Hazen's book *Genesis*, I can recommend him strongly for the task.

One problem facing authors of introductory books on the origin of life is the popularity of two almost antagonistic scenarios. Stanley Miller's classic experiments on the synthesis of amino acids in a reducing atmosphere led to the idea of a 'prebiotic soup', according to which a genetic system evolved directly in the surface waters of the early Earth. In contrast, Günter Wächtershäuser argued that a complex, non-genetic metabolism evolved on the surface of metal sulphides in geothermal environments, probably in deep-sea vents, before the appearance of a genetic system. Hazen is a metabolist, but he is even-handed in his treatment of the two approaches, at times making it clear that one of his opinions is a minority view.

Like a good guide, Hazen visits all the major sites. Naturally, Miller's experiments are on the itinerary, but visits to all the prominent experimental programmes follow. Hazen is sympathetic to theoretical models and includes lengthy descriptions of some highly speculative proposals. However, he always makes it clear that these proposals are speculative and lack experimental support.

J. TUCCIARONE/SPL

A difficult start: quite how the barren early Earth gave rise to life remains shrouded in mystery.

Hazen's style is lively and he has a knack for describing clearly and concisely the way that experimental techniques, such as mass spectrometry, work. His peripheral material is well chosen, if not always directly related to the origin of life. I was surprised to learn that if I was reconstituted with all of my ^{12}C replaced by the ^{13}C isotope, my weight would increase by three pounds. And I was fascinated by his account of a memorable confrontation between experts on Precambrian fossils. Diversions of this kind reduce the fatigue of the journey.

I particularly liked the biographical and autobiographical sections, as it is good to know something about your guide and his friends. Hazen is generous in his brief descriptions of his collaborators' personalities. His accounts of his own experiences in the lab give a vivid picture of what it is like to be an experimentalist. You can imagine him watching intently as the pen of a recorder approaches a critical point, and willing a peak to appear.

The text is accompanied by copious notes and a list of well-chosen references. Unfortunately, there is no indication in the text of their existence. To find the notes you must go to the end of the book, where they are organized by text page, and the references can only be accessed from the notes. This inconvenient arrangement could perhaps be addressed in a later edition.

But this criticism is minor. This book provides the best overview of the 'origin of life' field for the non-specialist reader that I have encountered. I think that even those who are familiar with most of its contents will enjoy the presentation. ■

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